

REMARKS

CLAIM 1

Claims 1 was rejected under 35 U.S.C §103(a) as being unpatentable over Acero ("Environmental Robustness in Automatic Speech Recognition" IEEE 1990) in view of Arslan (U.S. Patent 5,706,395, hereinafter Arslan).

Claim 1 provides a method of identifying a clean speech signal from a noisy speech signal. The method includes receiving an observation vector representing a segment of a noisy speech signal and estimating a clean speech value and a noise value based on the observation vector. The clean speech value and the noise value are used to set a gain for a filter wherein the gain is defined as a ratio with the denominator of the ratio being the sum of the clean speech value and the noise value and the numerator of the ratio that is a function of the clean speech value and the noise value. The observation vector is applied to the filter to produce a filtered clean speech vector representing a segment of a clean speech signal.

With the present amendment, claim 1 has been amended to change "comprising" to "being" in describing the denominator. Support for this amendment is found on page 15, Equation 3.

Claim 1 is not shown or suggested in the combination of Acero and Arslan. In particular, neither reference shows or suggests setting the numerator of a gain ratio for a filter as a function of a clean speech value and a noise value while setting the denominator as the sum of the clean speech value and the noise value.

In particular, column 11 of Arslan does not show such a gain ratio. In the Office Action, $P_s(\omega)$ in the equation on line 30 of Column 11 was said to be a function of the clean speech value and the noise value. However, if this is true, then the denominator in that equation is not the sum of a clean speech value and a noise value because the denominator adds an additional term, $\alpha P_n(\omega)$, to $P_s(\omega)$. Instead, the denominator is the sum of a second noise value with a function of a clean speech value and a noise value.

As such, the combination of Acero and Arslan does not show or suggest claim 1.

CLAIMS 2-6, 9 and 10

In the Office Action, independent claim 24 was allowed. With the present amendment, the dependencies of claims 2-6, 9 and 10 have been changed to depend from claim 24 instead of claim 1. Since claim 24 has been allowed, claims 2-6, 9 and 10 are in form for allowance.

CLAIMS 13-23

Claims 13-23 were rejected under 35 U.S.C. §103(a) as being unpatentable over Acero in view of Arslan.

Claim 13 provides a computer-readable storage medium having computer executable instructions for obtaining an estimate of a clean speech value and an estimate of a noise value derived from a noisy speech signal. A numerator of a filter gain ratio is set as a function of the clean speech value and the noise value. A denominator of the filter gain ratio is set as the sum of the clean speech value and the noise value. The filter gain ratio is then used in a filter that is applied to the noisy speech signal.

Independent claim 13 is patentable over the combination of Acero and Arslan because neither reference shows or suggests setting a numerator of a filter gain ratio as a function of a clean speech value and a noise speech value while setting the denominator of the filter gain ratio as the sum of the clean speech value and the noise speech value.

As noted above for claim 1, the filter ratio shown in column 11 of Arslan does not show such a ratio because if $P_s(\omega)$ in the numerator is considered to be a function of a clean speech value and a noise value, then the denominator, $P_s(\omega) + \alpha P_n(\omega)$, is not the sum of a clean speech value and a noise value. Instead, it is the sum of a second noise value with a function of a clean speech value and a noise value. As such, claim 13 and claims 14-23 which depend therefrom, are patentable over the combination of Acero and Arslan.

CONCLUSION

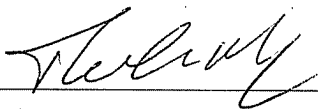
Based on the above remarks, claims 1-6 and 9-24 are in form for allowance. Reconsideration and allowance of the claims is respectfully requested.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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